

CLAIMS

Therefore, having thus described the invention, at least the following is claimed:

- 1           1.       A dual mode file system in a subscriber network television system, comprising:  
2                   a memory with logic; and  
3                   a processor configured with the logic to use remote data to support the processor until  
4           the logic detects that local data is available.
  
- 1           2.       The dual mode file system of claim 1, wherein the logic is further configured to  
2           support the processor with the remote data and the local data when the logic detects that the local data  
3           is available.
  
- 1           3.       The dual mode file system of claim 1, wherein the remote data and the local data  
2           includes media content.
  
- 1           4.       The dual mode file system of claim 1, wherein the local data is located in a local file  
2           system and the remote data is located in a virtual file system.
  
- 1           5.       The dual mode file system of claim 4, wherein the processor is further configured  
2           with the logic to detect when the local file system is connected.
  
- 1           6.       The dual mode file system of claim 4, wherein the processor is further configured  
2           with the logic to detect when the local file system is disconnected.
  
- 1           7.       The dual mode file system of claim 4, wherein the processor is further configured  
2           with the logic to detect when the local file system is operable.
  
- 1           8.       The dual mode file system of claim 4, wherein the processor is further configured  
2           with the logic to detect when the local file system is inoperable.
  
- 1           9.       The dual mode file system of claim 4, wherein the processor is further configured  
2           with the logic to provide feedback to a user when the local file system is available.

1           10.     The dual mode file system of claim 4, wherein the processor is further configured  
2 with the logic to transition from supporting the processor with data from the combination of the  
3 virtual file system and the local file system to supporting the processor with data from the virtual file  
4 system when the logic detects that the local file system is unavailable.

1           11.     The dual mode file system of claim 4, wherein the logic is configured to support the  
2 processor with data from the virtual file system by receiving the data into the memory and causing  
3 playback of the data from the memory to a screen display.

1           12.     The dual mode file system of claim 4, wherein the processor is further configured  
2 with the logic to substantially simultaneously transfer data to the local file system while receiving  
3 additional data from the virtual file system to the memory.

1           13.     The dual mode file system of claim 4, wherein the logic is configured to support the  
2 processor with data from the local file system by receiving the data into the memory, wherein the  
3 logic is further configured to cause playback from the memory to a screen display.

1           14.     The dual mode file system of claim 4, wherein the logic is configured to support the  
2 processor with data from the local file system by streaming the data from the local file system to a  
3 display device.

1           15.     The dual mode file system of claim 4, wherein the processor is further configured  
2 with the logic to receive data through an out-of band channel.

1           16.     The dual mode file system of claim 4, wherein the processor is further configured  
2 with the logic to store in the local file system data associated with a future media content instance,  
3 wherein said data is received into the local file system in advance of the presentation of said future  
4 media content instance.

1           17.     The dual mode file system of claim 4, wherein the processor is further configured  
2 with the logic to receive data from the virtual file system to the local file system while substantially  
3 simultaneously uploading data from the local file system.

1           18.     The dual mode file system of claim 4, wherein the processor is further configured  
2 with the logic to perform multiple read operations and multiple write operations in parallel to access a  
3 plurality of data in the local file system.

1           19.     The dual mode file system of claim 18, wherein the multiple read operations and the  
2 multiple write operations occur substantially concurrently within substantially the same window of  
3 time.

1           20.     The dual mode file system of claim 18, wherein the multiple read operations and the  
2 multiple write operations share slices of a window of time as if occurring substantially in parallel.

1           21.     The dual mode file system of claim 4, wherein the local file system comprises a  
2 storage device with media, wherein the media is partitioned into a data portion with a data format for  
3 storing data and low memory consumption media content and a media content portion with a media  
4 content format for storing media content.

1           22.     The dual mode file system of claim 21, wherein the processor is further configured  
2 with the logic to receive the media content into the data portion unless the media content consumes a  
3 threshold memory capacity that results in the processor receiving the media content with at least the  
4 threshold memory capacity into the media content portion.

1           23.     The dual mode file system of claim 21, wherein the media is partitioned into a third  
2 media content portion for streaming media content for presentation to a user.

1           24.     The dual mode file system of claim 21, wherein the media partitions are user  
2 configurable.

1           25.     The dual mode file system of claim 4, further comprising two tuners for receiving  
2 data among a plurality of transmission channels, further comprising an out of band channel for  
3 receiving and sending data, further comprising a communication port.

1           26.     The dual mode file system of claim 25, wherein the plurality of the transmission  
2 channels includes at least one digital transmission channel and at least one analog transmission  
3 channel.

1           27.     The dual mode file system of claim 25, wherein the processor is further configured  
2 with the logic to request a plurality of data simultaneously from the plurality of the transmission  
3 channels.

1           28.     The dual mode file system of claim 25, wherein the memory and the local file system  
2 store application data, application executable programs, and data associated with applications, and  
3 data associated with media services.

1           29.     The dual mode file system of claim 25, wherein the processor is further configured  
2 with the logic to perform a multiplicity of write operations to the local file system substantially in  
3 parallel to store data and application clients from a subscriber television network, from the processor,  
4 and from a local device connected to the communication port.

1           30.     The dual mode file system of claim 25, wherein the processor is further configured  
2 with the logic to perform a multiplicity of read operations from the local file system in parallel to  
3 retrieve data and application clients previously stored in the local file system to transmit the respective  
4 data and application clients to a local device connected to the communication port, to the memory for  
5 use by an application client or operating system executing in the processor, and to be transmitted to a  
6 destination in the subscriber network.

1           31.     The dual mode file system of claim 25, wherein the processor is further configured  
2 with the logic to perform a multiplicity of read operations from the local file system in parallel to  
3 retrieve data and application clients previously stored in the local file system to transmit the respective  
4 data and application programs to a local device connected to the communication port, to the memory  
5 for use by an application or operating system executing in the processor, and to be transmitted to a  
6 destination outside of the subscriber network.

1           32.     The dual mode file system of claim 25, wherein the processor is further configured  
2 with the logic to substantially simultaneously permanently record a media content instance received  
3 from one transmission channel and temporarily store a media content instance received from another  
4 transmission channel.

1           33.     The dual mode file system of claim 25, wherein the processor is further configured  
2 with the logic to permanently record two media content instances substantially simultaneously from  
3 two different transmission channels.

1           34.     The dual mode file system of claim 25, wherein the processor is further configured  
2 with the logic to substantially simultaneously display three media content instances, wherein the two  
3 media content instances are received from the transmission channels and the third media content  
4 instance is received from the local file system.

1           35.     The dual mode file system of claim 25, wherein the media content instances from the  
2 transmission channels are received in real-time.

1           36.     The dual mode file system of claim 4, further comprising an application client,  
2 wherein the processor is further configured with the logic to use the memory and the local file system  
3 for storing application client data in data structures with time-sensitive data entries maintained by an  
4 application client daemon task.

1           37.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to receive the application client data from an in-band tuner.

1           38.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to receive the application client data from a plurality of in-band tuners.

1           39.     The dual mode file system of claim 36, wherein the application client is an electronic  
2 programming guide with electronic programming guide information, wherein the electronic  
3 programming guide information includes a list of media content instances for a standard amount of  
4 days, a list of media content instances for an extended amount of days, channels for the media content  
5 instances, standard description information for the media content instances, long description  
6 information for the media content instances, and media content instance preview audio and video  
7 clips.

1           40.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to receive the electronic programming guide information entirely into the memory,  
3 wherein the processor is further configured with the logic to access the electronic programming guide  
4 information for presentation in a display device.

1           41.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to receive the electronic programming guide information entirely into the local file  
3 system, wherein processor is further configured with the logic to access the electronic programming  
4 guide information for presentation in a display device.

1           42.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to receive the list of media content instances for an extended amount of days and the  
3 corresponding standard description information into the local file system.

1           43.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to receive the list of media content instances for an extended amount of days and the  
3 corresponding standard description information and long description information into the local file  
4 system.

1           44.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to receive the long description information into the local file system for the list of  
3 media content instances for the standard amount of days stored in the memory.

1           45.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to receive the media content instance preview audio and data clips associated with the  
3 media content instance in the list of media content instances for the standard amount of days and store  
4 said media content instance preview audio and data clips into the memory.

1           46.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to transfer said media content instance preview audio and data clips from the memory  
3 to the local file system, wherein the processor is further configured with the logic to access said media  
4 content instance preview audio and data clips from the local file system to the memory, wherein the  
5 processor is further configured with the logic to present said media content preview audio and data  
6 clips on a display device from the memory.

1           47.     The dual mode file system of claim 36, wherein the processor is further configured  
2 with the logic to transfer said media content instance preview audio and data clips from the memory  
3 to the local file system, wherein the processor is further configured with the logic to access said media  
4 content instance preview audio and data clips from the local file system and present said media  
5 content instance preview audio and data clips on a display device from the local file system.

1           48.     The dual mode file system of claim 4, wherein the processor is further configured  
2 with the logic to access sprites from the virtual file system and store in the local file system to  
3 augment the presentation of media content instances when retrieved from the local file system from an  
4 application client.

1           49.     The dual mode file system of claim 4, wherein the processor is further configured  
2 with the logic to retrieve hyper-linked data corresponding to a media content instance before the  
3 presentation of said media content instance.

1           50.     The dual mode file system of claim 49, wherein the application client is further  
2 configured to maintain hyper-linked data in entries in a hyper-linked data structure indexed by time  
3 and date and service.

1           51.     The dual mode file system of claim 49, wherein the application client is further  
2 configured to maintain hyper-linked data in entries in a hyper-linked data structure indexed by time  
3 and date and channel.

1           52.     The dual mode file system of claim 51, wherein the hyper-linked data entries are  
2 valid for a specific time, after which said hyper-linked data associated with an elapsed data entry is  
3 replaced with a replacement hyper-linked data that also is valid for a specific time,

1           53.     The dual mode file system of claim 52, wherein the hyper-linked data structure  
2 provides a channel directory and subdirectories segregated into time blocks corresponding to the  
3 media content instance time period of presentation, wherein the time blocks include a current time  
4 block and an upcoming time block.

1           54.     The dual mode file system of claim 53, wherein the current time block and upcoming  
2 time block are further segregated into time slots of increased granularity corresponding to the timed  
3 presentation of the hyper-linked data with a corresponding instance in a media content instance within  
4 said time blocks.

1           55.     The dual mode file system of claim 54, wherein the hyper-linked data structure is  
2 updated continuously by the application client to maintain the hyper-linked data for current and  
3 upcoming media content instances.

1           56.     The dual mode file system of claim 55, wherein the application client is further  
2 configured to update the hyper-linked data when the time and date has substantially elapsed.

1           57.     The dual mode file system of claim 56, wherein the application client is further  
2 configured to use the local file system for caching hyper-linked data into the local file system from a  
3 virtual file system, wherein the hyper-linked data corresponds to data located in a designated time slot  
4 of a presentation of a media content instance, wherein the application is further configured to retrieve  
5 the hyper-linked data from the local file system and present it during its designated time slot during  
6 the presentation of the media content instance.

1           58.     A dual mode file method in a subscriber network television system comprising the  
2 steps of:  
3           searching for local data; and  
4           using remote data until the local data is detected.

1           59.     The method of claim 58, further comprising the steps of using a virtual file system for  
2 the remote data and using a local file system for the local data.

1           60.     The method of claim 58, wherein the data includes media content.

1           61.     The method of claim 59, further comprising the step of transferring data from the  
2 remote file system to the local file system when the local file system is detected, then further  
3 comprising the step of receiving the data into a memory and causing the playback from the memory to  
4 a screen display.

1           62.     The method of claim 59, wherein the step of using the remote file system further  
2 comprises the step of receiving the data into a memory and causing playback from the memory to a  
3 screen display.

1           63.     The method of claim 59, wherein the step of using the local file system further  
2 comprises the step of streaming the data from the local file system to a display device.

1           64.     The method of claim 59, further comprising the step of partitioning the local file  
2 system into a data portion and a media content portion.

1           65.     The method of claim 64, further comprising the step of receiving the media content  
2 into the data portion, unless the media content consumes a threshold memory capacity that causes it to  
3 be received into the media content portion.

1           66.     The method of claim 64, further comprising the step of partitioning the local file  
2 system into a third partition.



1           67.     The method of claim 59, further comprising the step of receiving time sensitive data  
2 in the local file system and in a memory, further comprising the step of storing the time sensitive data  
3 in a data structure entries indexed by time, further comprising the step of updating the data structure  
4 entries as the time indexes substantially elapse, further comprising the step of retrieving the time  
5 sensitive data from the local file system and causing the presentation of the time sensitive data in  
6 coordination with the presentation of a media content instance.

1           68.     The method of claim 59, further comprising the step of receiving sprites from the  
2 virtual file system and storing the sprites in the local file system, further comprising the step of  
3 retrieving the sprites from the local file system and causing the presentation of the sprites in  
4 coordination with the presentation of a media content instance.

1           69.     The method of claim 59, further comprising the steps of detecting when the local file  
2 system is connected.

1           70.     The method of claim 59, further comprising the step of detecting when the local file  
2 system is disconnected.

1           71.     The method of claim 59, further comprising the step of detecting when the local file  
2 system is operable.

1           72.     The method of claim 59, further comprising the step of detecting when the local file  
2 system is inoperable.

1           73.     The method of claim 59, further comprising the step of providing feedback to a user  
2 when the local file system is available.

1           74.     The method of claim 59, further comprising the step of transitioning from using the  
2 combination of the virtual file system and the local file system to using the virtual file system when  
3 the logic file system is unavailable.

1           75.     The method of claim 59, further comprising the step of substantially simultaneously  
2 transferring data to the local file system while receiving additional data from the virtual file system to  
3 the memory.

1           76.     The method of claim 59, further comprising the step of receiving the data through an  
2 out-of band channel.

1           77.     The method of claim 59, further comprising the step of storing in the local file system  
2 data associated with a future media content instance, wherein said data is received into the local file  
3 system in advance of the presentation of said future media content instance.

1           78.     The method of claim 59, further comprising the step of receiving data from a virtual  
2 file system to a local file system while substantially simultaneously uploading data from a local file  
3 system.

1           79.     The method of claim 59, further comprising the step of performing multiple read  
2 operations and multiple write operations in parallel to access a plurality of data in the local file  
3 system.

1           80.     The method of claim 79, wherein the multiple read operations and the multiple write  
2 operations occur substantially concurrently within substantially the same window of time.

1           81.     The method of claim 79, wherein the multiple read operations and the multiple write  
2 operations share slices of a window of time as if occurring substantially in parallel.

1           82.     The method of claim 59, further comprising the step of reading to and writing from  
2 user configurable media partitions in the local file system.

1           83.     The method of claim 59, further comprising the step of receiving the data among a  
2 plurality of transmission channels, wherein the transmission channels further comprise an out of band  
3 channel for receiving and sending data.

1           84.     The method of claim 83, wherein the plurality of the transmission channels includes  
2 at least one digital transmission channel and at least one analog transmission channel.

1           85.     The method of claim 83, further comprising the step of receiving a plurality of the  
2 data simultaneously from the plurality of the transmission channels.

1           86.     The method of claim 83, further comprising the step of performing a multiplicity of  
2 write operations to the local file system substantially in parallel to storing the data and application  
3 clients from a subscriber television network, from a processor, and from a local device.

1           87.     The method of claim 83, further comprising the step of performing a multiplicity of  
2 read operations from the local file system in parallel to retrieve the data and application clients  
3 previously stored in the local file system to transmit the respective data and application clients to a  
4 local device, to a memory for use by an application client or operating system executing in a  
5 processor, and to be transmitted to a destination outside of the subscriber network.

1           88.     The method of claim 83, further comprising the step of substantially simultaneously  
2 permanently recording a media content instance received from one transmission channel and  
3 temporarily storing media content instance received from another transmission channel.

1           89.     The method of claim 83, further comprising the step of permanently recording two  
2 media content instances substantially simultaneously from two different transmission channels.

1           90.     The method of claim 83, further comprising the step of substantially simultaneously  
2 displaying three media content instances, wherein the two media content instances are received from  
3 the transmission channels and the third media content instance is received from the local file system.

1           91.     The method of claim 83, further comprising the step of receiving the media content  
2 instances from the transmission channels in real-time.

1           92.     The method of claim 59, further comprising the step of storing application client data  
2 associated with application clients in data structures with time-sensitive data entries maintained by an  
3 application client daemon task.

1           93.     The method of claim 92, further comprising the step of receiving the application  
2 client data from an in-band tuner.

1           94.     The method of claim 92, further comprising the step of receiving the application  
2 client data from a plurality of in-band tuners.

1           95.     The method of claim 92, wherein the application client is an electronic programming  
2 guide with electronic programming guide information, wherein the electronic programming guide  
3 information includes a list of media content instances for a standard amount of days, a list of media  
4 content instances for an extended amount of days, channels for the media content instances, standard  
5 description information for the media content instances, long description information for the media  
6 content instances, and media content instance preview audio and video clips.

1           96.     The method of claim 95, further comprising the step of receiving the electronic  
2 programming guide information entirely into a memory, further comprising the step of accessing the  
3 electronic programming guide information for presentation in a display device.

1           97.     The method of claim 95, further comprising the step of receiving the electronic  
2 programming guide information entirely into the local file system, further comprising the step of  
3 accessing the electronic programming guide information for presentation in a display device.

1           98.     The method of claim 95, further comprising the step of receiving the long description  
2 information into the local file system for the list of media content instances for the standard amount of  
3 days stored in a memory.

1           99.     The method of claim 95, further comprising the step of receiving the media content  
2 instance preview audio and data clips associated with the media content instance in the list of the  
3 media content instances for the standard amount of days and store said media content instance  
4 preview audio and data clips into a memory.

1           100.    The method of claim 99, further comprising the step of transferring said media  
2 content instance preview audio and data clips from the memory to the local file system, further  
3 comprising the step of accessing said media content instance preview audio and data clips from the  
4 local file system to the memory, further comprising the step of presenting said media content instance  
5 preview audio and data clips on a display device from the memory.

1           101.    The method of claim 99, further comprising the step of transferring said media  
2 content instance preview audio and data clips from the memory to the local file system, further  
3 comprising the step of accessing said media content instance preview audio and data clips from the  
4 local file system and presenting said media content instance preview audio and data clips on a display  
5 device from the local file system.

1           102.    The method of claim 59, further comprising the step of accessing sprites from the  
2 virtual file system and storing the sprites in the local file system to augment the presentation of media  
3 content instances when the sprites are retrieved from the local file system from an application client.

1           103.    The method of claim 59, further comprising the step of retrieving hyper-linked data  
2 corresponding to a media content instance before the presentation of the media content instance.

1           104.    A media client device comprising:  
2                    a memory;  
3                    a plurality of tuners; and  
4                    a processor configured with the memory to transition from supporting playback of  
5           media content from a virtual file system to a combination of the virtual file system and a local  
6           file system depending on the availability of the local file system.

1           105.    The device of claim 104, wherein the processor is further configured with the  
2           memory to substantially simultaneously receive, decode, and composite into a single display  
3           presentation the audio, video, graphical, and textual data of a first TV channel while substantially  
4           simultaneously storing in the local file system the audio, video, graphical, and textual data of the first  
5           TV channel.

1           106.    The device of claim 104, wherein the processor is further configured with the  
2           memory to substantially simultaneously receive, decode, and composite into a single display  
3           presentation the audio, video, graphical, and textual data of a first TV channel while substantially  
4           simultaneously reading, decoding, and compositing into the same single display presentation the  
5           audio, video, graphical, and textual data of a second TV channel, previously stored in the local file  
6           system, on a real-time basis.

1           107.    The device of claim 104, wherein the processor is further configured with the  
2           memory to substantially simultaneously receive, decode, and composite into a single display  
3           presentation the audio, video, graphical, and textual data of a first TV channel while substantially  
4           simultaneously reading, decoding, and compositing into the same single display presentation the  
5           audio, video, graphical, and textual data of a second TV channel, previously stored in the local file  
6           system, on a real-time basis, while substantially simultaneously reading media content and data  
7           corresponding to a third TV channel that was previously stored in the local file system and decoding  
8           and compositing into a single display presentation the audio, video, graphical, and textual data of the  
9           third TV channel.

1           108.    The device of claim 104, wherein the processor is further configured with the  
2           memory to retrieve previously stored digital audio in the local file system, and playing back the audio  
3           to complement the first TV channel.

1           109.    A hyper-linked data caching system comprising:  
2                    a memory; and  
3                    a processor configured with the memory to cache hyper-linked data in a data structure  
4                    indexed by the time of presentation with a corresponding media content instance.

1           110.    The caching system of claim 109, wherein the logic is further configured to retrieve  
2                    hyper-linked data corresponding to a media content instance before the presentation of the media  
3                    content instance.

1           111.    The caching system of claim 110, wherein the application client is further configured  
2                    to maintain hyper-linked data in entries in a hyper-linked data structure indexed by time and date and  
3                    channel.

1           112.    The caching system of claim 111, wherein the hyper-linked data entries are valid for a  
2                    specific time, after which said hyper-linked data associated with an elapsed data entry is replaced with  
3                    a replacement hyper-linked data that also is valid for a specific time,

1           113.    The caching system of claim 112, wherein the hyper-linked data structure provides a  
2                    channel directory and subdirectories segregated into time blocks corresponding to the media content  
3                    instance time period of presentation.

1           114.    The caching system of claim 113, wherein the time blocks include a current time  
2                    block and an upcoming time block.

1           115.    The caching system of claim 114, wherein the current time block and upcoming time  
2                    block are further segregated into time slots of increased granularity corresponding to the timed  
3                    presentation of the hyper-linked media content with a corresponding instance in a media content  
4                    instance within said time blocks.

1           116.    The caching system of claim 115, wherein the hyper-linked data structure is updated  
2                    continuously by the application client to maintain the hyper-linked media content for current and  
3                    upcoming media content instances.

1           117.    The caching system of claim 116, wherein the application client is further configured  
2                    to update the hyper-linked data when the time and date has substantially elapsed.

1           118.    The caching system of claim 117, wherein the application client is further configured  
2 to use the storage device for caching hyper-linked media content into the storage device from a remote  
3 device, wherein the hyper-linked media content corresponds to media content located in a designated  
4 time slot of a presentation of a media content instance, wherein the application is further configured to  
5 retrieve the hyper-linked media content from the storage device and present it during its designated  
6 time slot during the presentation of the media content instance.

1           119.    The caching system of claim 109, wherein the hyper-linked data includes hyper-  
2 linked media content.

1           120.    The caching system of claim 109, wherein the application client is further configured  
2 to maintain hyper-linked data in entries in a hyper-linked data structure indexed by time and date and  
3 service.

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1           121. A hyper-linked data caching method comprising the steps of:  
2           receiving hyper-linked data corresponding to a media content instance; and  
3           maintaining the hyper-linked data in a data structure indexed by time of presentation  
4           within the corresponding media content instance.

1           122. The caching method of claim 121, further comprising the step of segregating the data  
2           structure into subdirectories corresponding to channel and time period blocks.

1           123. The caching method of claim 122, further comprising the step of continually updating  
2           the subdirectory entries as time progresses.

1           124. The caching method of claim 123, wherein the step of updating includes the step of  
2           replacing time-elapsd hyper-linked data with hyper-linked data for a not-yet presented media content  
3           instance.

1           125. The caching method of claim 124, further comprising the step of providing time of  
2           presentation slots for a current time block and an upcoming time block.

1           126. The caching method of claim 125, further comprising the step of maintaining hyper-  
2           linked data within each time of presentation slot corresponding to the presentation of the media  
3           content instance associated with said hyper-linked data.

1           127. The caching method of claim 121, wherein the hyper-linked data includes hyper-  
2           linked media content.

1           128. The caching method of claim 121, further comprising the step of segregating the data  
2           structure into subdirectories corresponding to service and time period blocks.